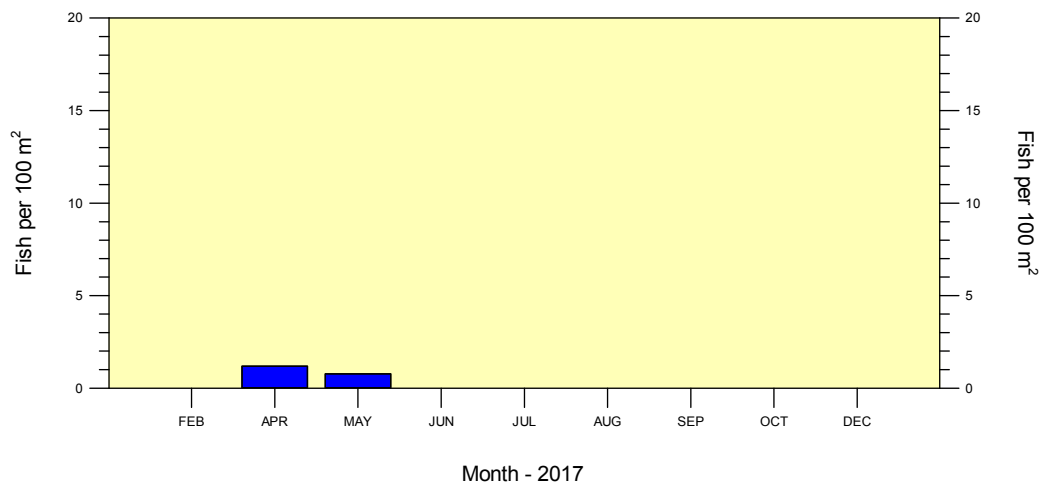
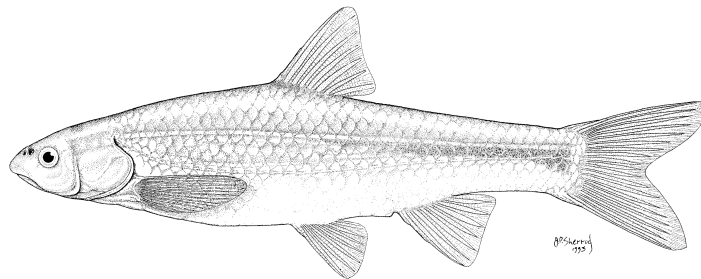


***RIO GRANDE SILVERY MINNOW POPULATION MONITORING RESULTS FROM
MAY 2017***

***A MIDDLE RIO GRANDE ENDANGERED SPECIES
COLLABORATIVE PROGRAM FUNDED RESEARCH PROJECT***



Robert K. Dudley^{1,2}, Steven P. Platania^{1,2}, and Gary C. White^{1,3}

¹ American SW Ichthyological Researchers; 800 Encino Place NE, Albuquerque, NM, 87102-2606

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² Div. of Fishes, Museum of SW Biology, UNM; MSC03-2020, Albuquerque, NM, 87131-0001

&

³ Dept. of Fish, Wildlife, and Conservation Biology, CSU; 10 Wagar, Fort Collins, CO, 80523-1474

16 June 2017

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Contract R17PC00028:

Requisition 0040306655

U.S. Bureau of Reclamation
Albuquerque Area Office
555 Broadway NE, Suite 100
Albuquerque, NM 87102-2352

submitted to:

U.S. Bureau of Reclamation
Albuquerque Area Office
555 Broadway NE, Suite 100
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SUMMARY OF MAY 2017 POPULATION MONITORING

The May population monitoring efforts were conducted at the 20 standard sites and at 10 additional sites. Ten sites were located in each of the three sampling reaches: Angostura, Isleta, and San Acacia. The Middle Rio Grande Endangered Species Collaborative Program requested that the additional sampling be conducted once in the spring and fall of each year. ***While this report follows the typical monthly report format, key changes to the text, tables, and figures (i.e., comparisons between standard sites and all sites for May 2017) are highlighted in bold-italic font.*** A list of all collection localities is appended (Table A). Adult and juvenile fish were obtained by rapidly drawing a 3.1 m x 1.8 m small mesh (3/16th inch) seine through discrete mesohabitats. Larval fish were also collected with a 1.0 m x 1.0 m fine mesh (1/16th inch) seine in all seasons except winter. All fishes were identified to species and enumerated. We used length-age relationships to assign ages (i.e., age-0, age-1, and age-2+) to all Rio Grande Silvery Minnow collected. Age-0 individuals are, however, only present after annual spring spawning occurs (ca. May–June). Figures illustrating fish densities (i.e., fish per 100 m²) were prepared for the ten focal species to facilitate comparisons across reaches.

Standard Sites (n = 20)

During May, sampling covered 8,737.1 m² (surface area) of water and yielded 892 fish. Cumulative fish density during May was 10.2 individuals/100 m² sampled. The three most common species were Red Shiner (n = 406), Flathead Chub (n = 154), and Common Carp (n = 74). The 20 sampling sites yielded a total of 16 fish species. Rio Grande Silvery Minnow was present in 27 of the 172 seine hauls that yielded fish. We collected Rio Grande Silvery Minnow at 12 of the 20 sampling sites, and its overall density was 0.77 (n = 67) individuals/100 m² sampled. Densities of unmarked and marked individuals were 0.76 (n = 66) and 0.01 (n = 1) individuals/100 m² sampled, respectively. Densities of age-0, age-1, and age-2+ individuals were 0.00 (n = 0), 0.76 (n = 66), and 0.01 (n = 1) individuals/100 m² sampled, respectively.

All Sites (n = 30)

During May, sampling covered 13,412.2 m² (surface area) of water and yielded 1,331 fish. Cumulative fish density during May was 9.9 individuals/100 m² sampled. The three most common species were Red Shiner (n = 602), Flathead Chub (n = 215), and Common Carp (n = 149). The 30 sampling sites yielded a total of 17 fish species. Rio Grande Silvery Minnow was present in 58 of the 259 seine hauls that yielded fish. We collected Rio Grande Silvery Minnow at 21 of the 30 sampling sites, and its overall density was 0.89 (n = 119) individuals/100 m² sampled. Densities of unmarked and marked individuals were 0.88 (n = 118) and 0.01 (n = 1) individuals/100 m² sampled, respectively. Densities of age-0, age-1, and age-2+ individuals were 0.00 (n = 0), 0.88 (n = 118), and 0.01 (n = 1) individuals/100 m² sampled, respectively.

Comparison of Standard Sites to All Sites

Population monitoring during May included sampling efforts taken at the 20 standard sampling sites and the 10 additional sites. There were five sites added to the Angostura Reach, four sites to the Isleta Reach, and one site to the San Acacia Reach. This raised the total sampling effort to 10 sites per sampling reach. Comparisons of Rio Grande Silvery Minnow densities (i.e., overall and reach-specific) include estimates based on the 20 standard sites and based on all 30 sites.

There was a 53.5% increase in the sampling effort and a 49.2% increase in the number of fish based on the addition of the 10 new sampling sites. The overall density of fish (individuals/100 m²) was 10.2 for the standard sites and 9.9 for all sites. The overall density of Rio Grande Silvery Minnow was 0.77 for the standard sites and 0.89 for all sites.

Reach-specific comparisons also revealed similarities between the sampling data collected from the 20 standard sites and from all 30 sites. Based on the standard sites, the density of Rio Grande Silvery Minnow was 2.02 in the Angostura Reach, 0.19 in the Isleta Reach, and 0.48 in the San Acacia Reach. Based on all sites, the density of Rio Grande Silvery Minnow was 1.50 in the Angostura Reach, 0.34 in the Isleta Reach, and 0.83 in the San Acacia Reach. The inclusion of the new sites has helped supplement the overall dataset, particularly in the Angostura and Isleta reaches.

Recent Population Trends

Rio Grande Silvery Minnow that were stocked during autumn 2016 (ca. 66,000; Thomas P. Archdeacon, New Mexico Fish and Wildlife Conservation Office, pers. comm.) were present at low densities during the spring of 2017. The overwinter mortality of Rio Grande Silvery Minnow resulted in substantial losses of individuals (both unmarked and marked) from December 2016 to May 2017. However, the abundance of Rio Grande Silvery Minnow in May 2017 was higher than it was in May 2016. Higher river flows have recently resulted in substantial inundation of floodplain and former side channel habitats. Ensuring elevated and extended spring flows will be crucial for the successful survival of Rio Grande Silvery Minnow during 2017.

MAY 2017 POPULATION MONITORING BY RIVER REACH (BASED ON STANDARD SITES)

Angostura Reach

Mean daily discharge in the Angostura Reach (Rio Grande at Albuquerque, NM; USGS Gage 8330000) averaged 3,842.1 and ranged from 2,700 to 5,270 cfs from 16 April to 15 May. Water temperatures ranged from 12.6 to 14.6 °C during the Angostura Reach sampling efforts (ca. 0830–1530 h). Secchi disk measurements of water clarity ranged from 12 to 17 cm.

Sampling for fishes in the Angostura Reach during May yielded 215 individuals with a cumulative fish density of 10.1 individuals/100 m² sampled. The overall sampling effort in the Angostura Reach covered 2,129.0 m² (surface area) of water. Densities of all fish species combined ranged from 5.5 to 14.4 individuals per 100 m² at the five sampling sites. In May, there were 9 fish species collected in the Angostura Reach. Flathead Chub was the most abundant taxon (n = 72), followed by Rio Grande Silvery Minnow (n = 43), and Red Shiner (n = 41). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 6.5 individuals per 100 m². Rio Grande Silvery Minnow (n = 43) was present in 12 of the 57 seine hauls that yielded fish during May.

Isleta Reach

In the Isleta Reach, mean daily discharge (Rio Grande at Isleta Lakes near Isleta, NM; USGS Gage 08354900) averaged 3,610.7 and ranged from 2,890 to 4,360 cfs from 16 April to 15 May. Water temperatures ranged from 15.2 to 17.9 °C throughout the sampling localities during the day (ca. 0930–1600 h). Secchi disk measurements ranged from 9 to 16 cm during sampling.

Isleta Reach population monitoring efforts produced 284 individuals in May with a cumulative fish density of 10.8 individuals/100 m² sampled. The total sampling effort in the Isleta Reach during May covered 2,628.3 m² (surface area) of water. Fish densities (all species combined) at the six sites ranged from 1.5 to 28.9 individuals per 100 m² sampled. There were 8 fish species collected in the Isleta Reach during May. Red Shiner was the most abundant taxon (n = 141), followed by Common Carp (n = 64), and White Sucker (n = 62). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 0.5 individuals per 100 m². Rio Grande Silvery Minnow (n = 5) was present in 3 of the 29 seine hauls that yielded fish during May.

San Acacia Reach

Mean daily discharge at San Acacia (Rio Grande Floodway at San Acacia, NM; USGS Gage 08354900) from 16 April to 15 May was generally higher (average = 2,943.9; range = 2,300–3,940 cfs) as compared to San Marcial (Rio Grande Floodway at San Marcial, NM; USGS Gage 08358400) during the same period (average = 2,882.1; range = 1,860–3,830 cfs). Water temperatures in May for the San Acacia Reach ranged from 12.5 to 16.9 °C (ca. 0930–1600 h). Water clarity was generally lower in this reach (Secchi disk range = 5–9 cm) compared to the two upstream reaches.

Population monitoring efforts in the San Acacia Reach during May yielded 393 individuals with a cumulative fish density of 9.9 individuals per 100 m² sampled. Sampling in the San Acacia Reach covered an area of 3,979.8 m² of water. Fish densities (all species combined) ranged from 0.2 to 31.1 individuals per 100 m² at the nine sites sampled in the San Acacia Reach. In May, there were 12 fish species collected in the San Acacia Reach. Red Shiner was the most abundant taxon (n = 224), followed by Flathead Chub (n = 78), and Channel Catfish (n = 45). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 2.6 individuals per 100 m². Rio Grande Silvery Minnow (n = 19) was present in 12 of the 86 seine hauls that yielded fish during May.

MAY 2017 POPULATION MONITORING BY RIVER REACH (BASED ON ALL SITES)

Angostura Reach

Mean daily discharge in the Angostura Reach (Rio Grande at Albuquerque, NM; USGS Gage 8330000) averaged 3,842.1 and ranged from 2,700 to 5,270 cfs from 16 April to 15 May. Water temperatures ranged from 12.6 to 14.6 °C during the Angostura Reach sampling efforts (ca. 0830–1530 h). Secchi disk measurements of water clarity ranged from 12 to 17 cm.

Sampling for fishes in the Angostura Reach during May yielded 498 individuals with a cumulative fish density of 11.0 individuals/100 m² sampled. The overall sampling effort in the Angostura Reach covered 4,545.0 m² (surface area) of water. Densities of all fish species combined ranged from 1.0 to 24.2 individuals per 100 m² at the five sampling sites. In May, there were 11 fish species collected in the Angostura Reach. Red Shiner was the most abundant taxon (n = 170), followed by Flathead Chub (n = 126), and Rio Grande Silvery Minnow (n = 68). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 6.5 individuals per 100 m². Rio Grande Silvery Minnow (n = 68) was present in 28 of the 100 seine hauls that yielded fish during May.

Isleta Reach

In the Isleta Reach, mean daily discharge (Rio Grande at Isleta Lakes near Isleta, NM; USGS Gage 08354900) averaged 3,610.7 and ranged from 2,890 to 4,360 cfs from 16 April to 15 May. Water temperatures ranged from 12.3 to 17.9 °C throughout the sampling localities during the day (ca. 0930–1600 h). Secchi disk measurements ranged from 6 to 17 cm during sampling.

Isleta Reach population monitoring efforts produced 407 individuals in May with a cumulative fish density of 8.7 individuals/100 m² sampled. The total sampling effort in the Isleta Reach during May covered 4,670.7 m² (surface area) of water. Fish densities (all species combined) at the six sites ranged from 0.4 to 28.9 individuals per 100 m² sampled. There were 10 fish species collected in the Isleta Reach during May. Red Shiner was the most abundant taxon (n = 198), followed by Common Carp (n = 98), and White Sucker (n = 63). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 1.4 individuals per 100 m². Rio Grande Silvery Minnow (n = 16) was present in 11 of the 64 seine hauls that yielded fish during May.

San Acacia Reach

Mean daily discharge at San Acacia (Rio Grande Floodway at San Acacia, NM; USGS Gage 08354900) from 16 April to 15 May was generally higher (average = 2,943.9; range = 2,300–3,940 cfs) as compared to San Marcial (Rio Grande Floodway at San Marcial, NM; USGS Gage 08358400) during the same period (average = 2,882.1; range = 1,860–3,830 cfs). Water temperatures in May for the San Acacia Reach ranged from 12.5 to 16.9 °C (ca. 0930–1600 h). Water clarity was generally lower in this reach (Secchi disk range = 5–9 cm) compared to the two upstream reaches.

Population monitoring efforts in the San Acacia Reach during May yielded 426 individuals with a cumulative fish density of 10.2 individuals per 100 m² sampled. Sampling in the San Acacia Reach covered an area of 4,196.6 m² of water. Fish densities (all species combined) ranged from 0.2 to 31.1 individuals per 100 m² at the nine sites sampled in the San Acacia Reach. In May, there were 12 fish species collected in the San Acacia Reach. Red Shiner was the most abundant taxon (n = 234), followed by Flathead Chub (n = 82), and Channel Catfish (n = 46). Densities of Rio Grande Silvery Minnow ranged from 0.0 to 7.4 individuals per 100 m². Rio Grande Silvery Minnow (n = 35) was present in 19 of the 95 seine hauls that yielded fish during May.



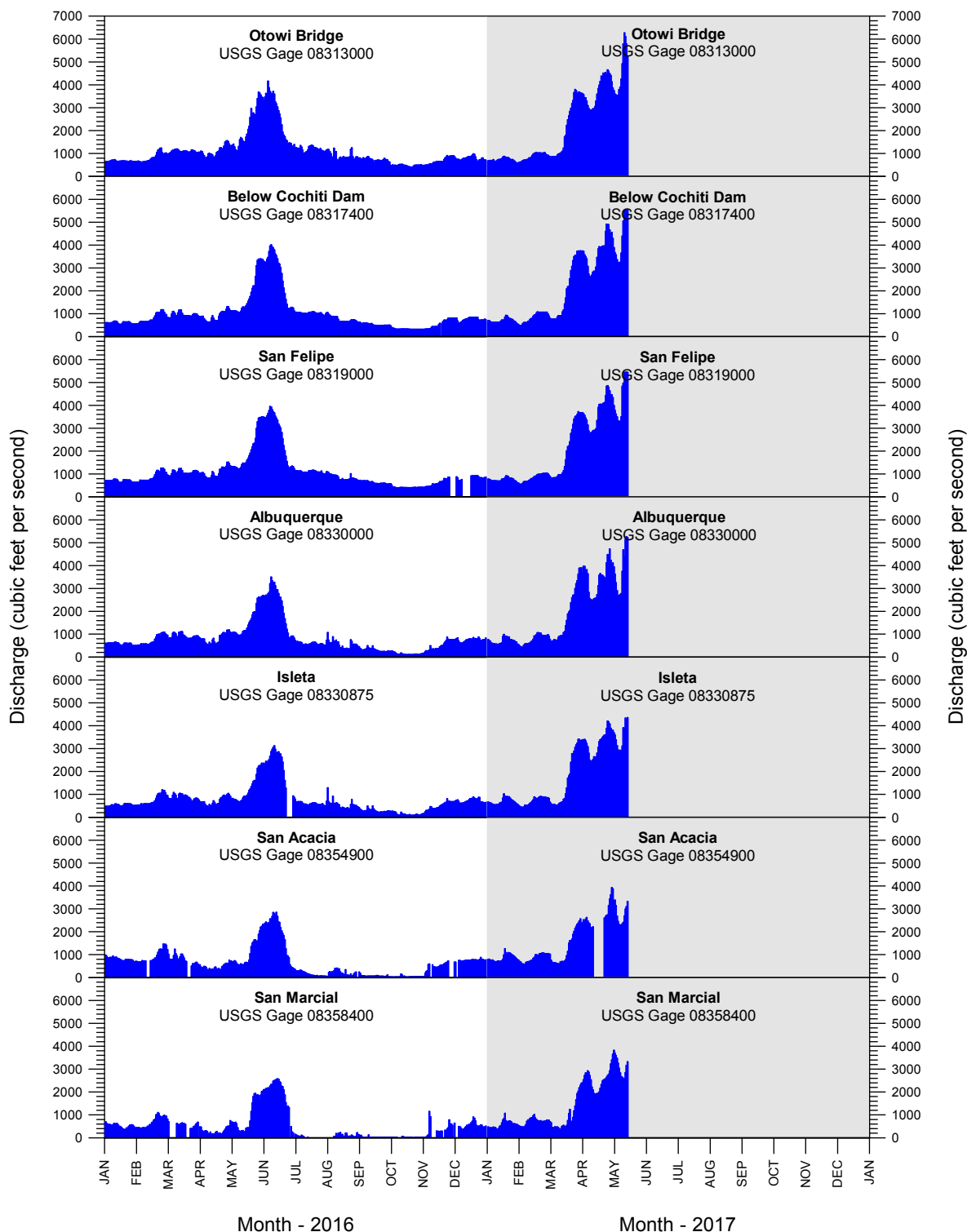


Figure 2. Rio Grande discharge from 1 January 2016 to 15 May 2017 at U.S. Geological Survey (USGS) gaging stations. Discharge data are provisional and subject to change.

Table 1. Scientific names, common names, and species codes of fish collected in the Middle Rio Grande since 1993.

Scientific Name	Common Name	Species Code
Order Clupeiformes		
Family Clupeidae		
	herrings	
<i>Dorosoma cepedianum</i>	Gizzard Shad	(DORCEP)
<i>Dorosoma petenense</i>	Threadfin Shad	(DORPET)
Order Cypriniformes		
Family Cyprinidae		
	carps and minnows	
<i>Campostoma anomalum</i>	Central Stoneroller	(CAMANO)
<i>Carassius auratus</i>	Goldfish	(CARAUR)
<i>Cyprinella lutrensis</i>	Red Shiner ¹	(CYPLUT)
<i>Cyprinus carpio</i>	Common Carp ¹	(CYPCAR)
<i>Gila pandora</i>	Rio Grande Chub	(GILPAN)
<i>Hybognathus amarus</i>	Rio Grande Silvery Minnow ¹	(HYBAMA)
<i>Notemigonus crysoleucas</i>	Golden Shiner	(NOTCRY)
<i>Pimephales promelas</i>	Fathead Minnow ¹	(PIMPRO)
<i>Pimephales vigilax</i>	Bullhead Minnow	(PIMVIG)
<i>Platygobio gracilis</i>	Flathead Chub ¹	(PLAGRA)
<i>Rhinichthys cataractae</i>	Longnose Dace ¹	(RHICAT)
Family Catostomidae		
	suckers	
<i>Carpodes carpio</i>	River Carpsucker ¹	(CARCAR)
<i>Catostomus commersonii</i>	White Sucker ¹	(CATCOM)
<i>Ictiobus bubalus</i>	Smallmouth Buffalo	(ICTBUB)
Order Siluriformes		
Family Ictaluridae		
	North American catfishes	
<i>Ameiurus melas</i>	Black Bullhead	(AMEMEL)
<i>Ameiurus natalis</i>	Yellow Bullhead	(AMENAT)
<i>Ictalurus furcatus</i>	Blue Catfish	(ICTFUR)
<i>Ictalurus punctatus</i>	Channel Catfish ¹	(ICTPUN)
<i>Pylodictis olivaris</i>	Flathead Catfish	(PYLOLI)
Order Salmoniformes		
Family Salmonidae		
	trouts and salmons	
<i>Oncorhynchus mykiss</i>	Rainbow Trout	(ONCMYK)
<i>Salmo trutta</i>	Brown Trout	(SALTRU)
Order Cyprinodontiformes		
Family Poeciliidae		
	livebearers	
<i>Gambusia affinis</i>	Western Mosquitofish ¹	(GAMAFF)

Table 1. Scientific names, common names, and species codes of fish collected in the Middle Rio Grande since 1993 (continued).

Scientific Name	Common Name	Species Code
Order Perciformes		
Family Moronidae		
	temperate basses	
<i>Morone chrysops</i>	White Bass	(MORCHR)
<i>Morone saxatilis</i>	Striped Bass	(MORSAX)
Family Centrarchidae		
	sunfishes	
<i>Lepomis cyanellus</i>	Green Sunfish	(LEPCYA)
<i>Lepomis macrochirus</i>	Bluegill	(LEPMAC)
<i>Lepomis megalotis</i>	Longear Sunfish	(LEPMEG)
<i>Micropterus dolomieu</i>	Smallmouth Bass	(MICDOL)
<i>Micropterus salmoides</i>	Largemouth Bass	(MICSAL)
<i>Pomoxis annularis</i>	White Crappie	(POMANN)
<i>Pomoxis nigromaculatus</i>	Black Crappie	(POMNIG)
Family Percidae		
	perches	
<i>Perca flavescens</i>	Yellow Perch	(PERFLA)
<i>Percina macrolepida</i>	Bigscale Logperch	(PERMAC)
<i>Sander vitreus</i>	Walleye	(SANVIT)

¹ = Focal taxa were the most abundant species from recent Middle Rio Grande collections.

Table 2. Summary of the May 2017 Rio Grande Silvery Minnow population monitoring results (species list is based on fish collected since 1993), **based on standard sites**.

Family	Common Name	Residence Status ¹	Total Number of Individuals	Percent (%) of Total	Frequency of Occurrence ²	% Frequency of Occurrence ²
Clupeidae	Gizzard Shad	N	2	0.22	1	5
Clupeidae	Threadfin Shad	I	-	-	-	-
Cyprinidae	Central Stoneroller	I	-	-	-	-
Cyprinidae	Goldfish	I	-	-	-	-
Cyprinidae	Red Shiner	N	406	45.52	18	90
Cyprinidae	Common Carp	I	74	8.30	4	20
Cyprinidae	Rio Grande Chub	N	-	-	-	-
Cyprinidae	Rio Grande Silvery Minnow	N	67	7.51	12	60
Cyprinidae	Golden Shiner	I	-	-	-	-
Cyprinidae	Fathead Minnow	N	3	0.34	1	5
Cyprinidae	Bullhead Minnow	I	-	-	-	-
Cyprinidae	Flathead Chub	N	154	17.26	11	55
Cyprinidae	Longnose Dace	N	41	4.60	6	30
Catostomidae	River Carpsucker	N	2	0.22	2	10
Catostomidae	White Sucker	I	73	8.18	4	20
Catostomidae	Smallmouth Buffalo	N	4	0.45	2	10
Ictaluridae	Black Bullhead	I	-	-	-	-
Ictaluridae	Yellow Bullhead	I	-	-	-	-
Ictaluridae	Blue Catfish	N	2	0.22	2	10
Ictaluridae	Channel Catfish	I	53	5.94	13	65
Ictaluridae	Flathead Catfish	N	1	0.11	1	5
Salmonidae	Rainbow Trout	I	-	-	-	-
Salmonidae	Brown Trout	I	-	-	-	-
Poeciliidae	Western Mosquitofish	I	8	0.90	3	15
Moronidae	White Bass	I	1	0.11	1	5
Moronidae	Striped Bass	I	-	-	-	-
Centrarchidae	Green Sunfish	I	1	0.11	1	5
Centrarchidae	Bluegill	N	-	-	-	-
Centrarchidae	Longear Sunfish	I	-	-	-	-
Centrarchidae	Smallmouth Bass	I	-	-	-	-
Centrarchidae	Largemouth Bass	I	-	-	-	-
Centrarchidae	White Crappie	I	-	-	-	-
Centrarchidae	Black Crappie	I	-	-	-	-
Percidae	Yellow Perch	I	-	-	-	-
Percidae	Bigscale Logperch	I	-	-	-	-
Percidae	Walleye	I	-	-	-	-
Monthly Total			892	100.00		

¹ = N (native); I (introduced)

² = Frequency and % frequency of occurrence were based on 20 site samples.

Table 3. Summary of the May 2017 Rio Grande Silvery Minnow population monitoring results (species list is based on fish collected since 1993), **based all sites**.

Family	Common Name	Residence Status ¹	Total Number of Individuals	Percent (%) of Total	Frequency of Occurrence ²	% Frequency of Occurrence ²
Clupeidae	Gizzard Shad	N	2	0.15	1	3.33
Clupeidae	Threadfin Shad	I	-	-	-	-
Cyprinidae	Central Stoneroller	I	-	-	-	-
Cyprinidae	Goldfish	I	-	-	-	-
Cyprinidae	Red Shiner	N	602	45.23	26	86.67
Cyprinidae	Common Carp	I	149	11.19	9	30.00
Cyprinidae	Rio Grande Chub	N	-	-	-	-
Cyprinidae	Rio Grande Silvery Minnow	N	119	8.94	21	70.00
Cyprinidae	Golden Shiner	I	-	-	-	-
Cyprinidae	Fathead Minnow	N	6	0.45	3	10.00
Cyprinidae	Bullhead Minnow	I	-	-	-	-
Cyprinidae	Flathead Chub	N	215	16.15	20	66.67
Cyprinidae	Longnose Dace	N	41	3.08	6	20.00
Catostomidae	River Carpsucker	N	5	0.38	4	13.33
Catostomidae	White Sucker	I	78	5.86	8	26.67
Catostomidae	Smallmouth Buffalo	N	4	0.30	2	6.67
Ictaluridae	Black Bullhead	I	-	-	-	-
Ictaluridae	Yellow Bullhead	I	-	-	-	-
Ictaluridae	Blue Catfish	N	2	0.15	2	6.67
Ictaluridae	Channel Catfish	I	61	4.58	16	53.33
Ictaluridae	Flathead Catfish	N	1	0.08	1	3.33
Salmonidae	Rainbow Trout	I	-	-	-	-
Salmonidae	Brown Trout	I	-	-	-	-
Poeciliidae	Western Mosquitofish	I	43	3.23	8	26.67
Moronidae	White Bass	I	1	0.08	1	3.33
Moronidae	Striped Bass	I	-	-	-	-
Centrarchidae	Green Sunfish	I	1	0.08	1	3.33
Centrarchidae	Bluegill	N	-	-	-	-
Centrarchidae	Longear Sunfish	I	-	-	-	-
Centrarchidae	Smallmouth Bass	I	-	-	-	-
Centrarchidae	Largemouth Bass	I	1	0.08	1	3.33
Centrarchidae	White Crappie	I	-	-	-	-
Centrarchidae	Black Crappie	I	-	-	-	-
Percidae	Yellow Perch	I	-	-	-	-
Percidae	Bigscale Logperch	I	-	-	-	-
Percidae	Walleye	I	-	-	-	-
Monthly Total			1,331	100.00		

¹ = N (native); I (introduced)

² = Frequency and % frequency of occurrence were based on 20 site samples.

Table 4. Summary of the Rio Grande Silvery Minnow population monitoring results by month, **based on standard sites**. Sampling was not conducted in February of 2017.

Family	Common Name	Feb	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Total
Clupeidae	Gizzard Shad	-	-	2	-	-	-	-	-	-	2
Clupeidae	Threadfin Shad	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Central Stoneroller	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Goldfish	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Red Shiner	-	159	406	-	-	-	-	-	-	565
Cyprinidae	Common Carp	-	12	74	-	-	-	-	-	-	86
Cyprinidae	Rio Grande Chub	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Rio Grande Silvery Minnow	-	111	67	-	-	-	-	-	-	178
Cyprinidae	Golden Shiner	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Fathead Minnow	-	4	3	-	-	-	-	-	-	7
Cyprinidae	Bullhead Minnow	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Flathead Chub	-	84	154	-	-	-	-	-	-	238
Cyprinidae	Longnose Dace	-	28	41	-	-	-	-	-	-	69
Catostomidae	River Carpsucker	-	2	2	-	-	-	-	-	-	4
Catostomidae	White Sucker	-	9	73	-	-	-	-	-	-	82
Catostomidae	Smallmouth Buffalo	-	-	4	-	-	-	-	-	-	4
Ictaluridae	Black Bullhead	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Yellow Bullhead	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Blue Catfish	-	-	2	-	-	-	-	-	-	2
Ictaluridae	Channel Catfish	-	86	53	-	-	-	-	-	-	139
Ictaluridae	Flathead Catfish	-	-	1	-	-	-	-	-	-	1
Salmonidae	Rainbow Trout	-	-	-	-	-	-	-	-	-	0
Salmonidae	Brown Trout	-	-	-	-	-	-	-	-	-	0
Poeciliidae	Western Mosquitofish	-	4	8	-	-	-	-	-	-	12
Moronidae	White Bass	-	-	1	-	-	-	-	-	-	1
Moronidae	Striped Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Green Sunfish	-	-	1	-	-	-	-	-	-	1
Centrarchidae	Bluegill	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Longear Sunfish	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Smallmouth Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Largemouth Bass	-	1	-	-	-	-	-	-	-	1
Centrarchidae	White Crappie	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Black Crappie	-	-	-	-	-	-	-	-	-	0
Percidae	Yellow Perch	-	-	-	-	-	-	-	-	-	0
Percidae	Bigscale Logperch	-	-	-	-	-	-	-	-	-	0
Percidae	Walleye	-	-	-	-	-	-	-	-	-	0
Monthly Totals		-	500	892	-	-	-	-	-	-	1,392

Table 5. Summary of the Rio Grande Silvery Minnow population monitoring results by month, **based on all sites**. Sampling was not conducted in February of 2017.

Family	Common Name	Feb	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Total
Clupeidae	Gizzard Shad	-	-	2	-	-	-	-	-	-	2
Clupeidae	Threadfin Shad	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Central Stoneroller	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Goldfish	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Red Shiner	-	159	602	-	-	-	-	-	-	761
Cyprinidae	Common Carp	-	12	149	-	-	-	-	-	-	161
Cyprinidae	Rio Grande Chub	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Rio Grande Silvery Minnow	-	111	119	-	-	-	-	-	-	230
Cyprinidae	Golden Shiner	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Fathead Minnow	-	4	6	-	-	-	-	-	-	10
Cyprinidae	Bullhead Minnow	-	-	-	-	-	-	-	-	-	0
Cyprinidae	Flathead Chub	-	84	215	-	-	-	-	-	-	299
Cyprinidae	Longnose Dace	-	28	41	-	-	-	-	-	-	69
Catostomidae	River Carpsucker	-	2	5	-	-	-	-	-	-	7
Catostomidae	White Sucker	-	9	78	-	-	-	-	-	-	87
Catostomidae	Smallmouth Buffalo	-	-	4	-	-	-	-	-	-	4
Ictaluridae	Black Bullhead	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Yellow Bullhead	-	-	-	-	-	-	-	-	-	0
Ictaluridae	Blue Catfish	-	-	2	-	-	-	-	-	-	2
Ictaluridae	Channel Catfish	-	86	61	-	-	-	-	-	-	147
Ictaluridae	Flathead Catfish	-	-	1	-	-	-	-	-	-	1
Salmonidae	Rainbow Trout	-	-	-	-	-	-	-	-	-	0
Salmonidae	Brown Trout	-	-	-	-	-	-	-	-	-	0
Poeciliidae	Western Mosquitofish	-	4	43	-	-	-	-	-	-	47
Moronidae	White Bass	-	-	1	-	-	-	-	-	-	1
Moronidae	Striped Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Green Sunfish	-	-	1	-	-	-	-	-	-	1
Centrarchidae	Bluegill	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Longear Sunfish	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Smallmouth Bass	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Largemouth Bass	-	1	1	-	-	-	-	-	-	2
Centrarchidae	White Crappie	-	-	-	-	-	-	-	-	-	0
Centrarchidae	Black Crappie	-	-	-	-	-	-	-	-	-	0
Percidae	Yellow Perch	-	-	-	-	-	-	-	-	-	0
Percidae	Bigscale Logperch	-	-	-	-	-	-	-	-	-	0
Percidae	Walleye	-	-	-	-	-	-	-	-	-	0
Monthly Totals		-	500	1,331	-	-	-	-	-	-	1,831

Table 6. Summary of the abundance of Rio Grande Silvery Minnow, by reach, site, and month, during 2017, **based on standard sites**. Marked individuals at sites are shown in parentheses. Sampling was not conducted in February of 2017.

Reach	Site	Locality	Feb	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Total
Angostura	1	Angostura Dam	-	-	-	-	-	-	-	-	-	0
Angostura	2	Bernalillo	-	8(0)	-	-	-	-	-	-	-	8
Angostura	3	Rio Rancho	-	-	1(0)	-	-	-	-	-	-	1
Angostura	4	Central Ave.	-	9(0)	28(0)	-	-	-	-	-	-	37
Angostura	5	Rio Bravo Blvd.	-	18(0)	14(0)	-	-	-	-	-	-	32
<i>Angostura Totals</i>			-	35	43	-	-	-	-	-	-	78
Isleta	6	Los Lunas	-	-	-	-	-	-	-	-	-	0
Isleta	7	Belen	-	-	2(0)	-	-	-	-	-	-	2
Isleta	8	Jarales	-	2(0)	2(0)	-	-	-	-	-	-	4
Isleta	9	Bernardo	-	-	-	-	-	-	-	-	-	0
Isleta	10	La Joya	-	-	1(0)	-	-	-	-	-	-	1
Isleta	11	North of San Acacia	-	-	-	-	-	-	-	-	-	0
<i>Isleta Totals</i>			-	2	5	-	-	-	-	-	-	7
San Acacia	12	San Acacia Dam	-	15(0)	2(0)	-	-	-	-	-	-	17
San Acacia	13	South of San Acacia	-	37(0)	12(0)	-	-	-	-	-	-	49
San Acacia	14	Socorro	-	1(0)	-	-	-	-	-	-	-	1
San Acacia	15	North of San Antonio	-	18(0)	2(0)	-	-	-	-	-	-	20
San Acacia	16	San Antonio	-	-	1(0)	-	-	-	-	-	-	1
San Acacia	17	South of San Antonio	-	-	1(0)	-	-	-	-	-	-	1
San Acacia	18	San Marcial	-	2(0)	-	-	-	-	-	-	-	2
San Acacia	19	South of San Marcial 1	-	1(1)	-	-	-	-	-	-	-	1
San Acacia	20	South of San Marcial 2	-	-	1(1)	-	-	-	-	-	-	1
<i>San Acacia Totals</i>			-	74	19	-	-	-	-	-	-	93
Monthly Totals			-	111	67	-	-	-	-	-	-	178

Table 7. Summary of the abundance of Rio Grande Silvery Minnow, by reach, site, and month, during 2017, **based on all sites**. Marked individuals at sites are shown in parentheses. Sampling was not conducted in February of 2017.

Reach	Site	Locality	Feb	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Total
Angostura	1	Angostura Dam	-	-	-	-	-	-	-	-	-	0
Angostura	2	Bernalillo	-	8(0)	-	-	-	-	-	-	-	8
Angostura	3	Rio Rancho	-	-	1(0)	-	-	-	-	-	-	1
Angostura	21	Site 21	-	-	3(0)	-	-	-	-	-	-	3
Angostura	22	Site 22	-	-	-	-	-	-	-	-	-	0
Angostura	23	Site 23	-	-	1(0)	-	-	-	-	-	-	1
Angostura	24	Site 24	-	-	10(0)	-	-	-	-	-	-	10
Angostura	4	Central Ave.	-	9(0)	28(0)	-	-	-	-	-	-	37
Angostura	5	Rio Bravo Blvd.	-	18(0)	14(0)	-	-	-	-	-	-	32
Angostura	25	Site 25	-	-	11(0)	-	-	-	-	-	-	11
<i>Angostura Totals</i>			-	35	68	-	-	-	-	-	-	103
Isleta	26	Site 26	-	-	7(0)	-	-	-	-	-	-	7
Isleta	6	Los Lunas	-	-	-	-	-	-	-	-	-	0
Isleta	27	Site 27	-	-	2(0)	-	-	-	-	-	-	2
Isleta	7	Belen	-	-	2(0)	-	-	-	-	-	-	2
Isleta	8	Jarales	-	2(0)	2(0)	-	-	-	-	-	-	4
Isleta	28	Site 28	-	-	1(0)	-	-	-	-	-	-	1
Isleta	9	Bernardo	-	-	-	-	-	-	-	-	-	0
Isleta	10	La Joya	-	-	1(0)	-	-	-	-	-	-	1
Isleta	29	Site 29	-	-	1(0)	-	-	-	-	-	-	1
Isleta	11	North of San Acacia	-	-	-	-	-	-	-	-	-	0
<i>Isleta Totals</i>			-	2	16	-	-	-	-	-	-	18
San Acacia	12	San Acacia Dam	-	15(0)	2(0)	-	-	-	-	-	-	17
San Acacia	13	South of San Acacia	-	37(0)	12(0)	-	-	-	-	-	-	49
San Acacia	30	Site 30	-	-	16(0)	-	-	-	-	-	-	16
San Acacia	14	Socorro	-	1(0)	-	-	-	-	-	-	-	1
San Acacia	15	North of San Antonio	-	18(0)	2(0)	-	-	-	-	-	-	20
San Acacia	16	San Antonio	-	-	1(0)	-	-	-	-	-	-	1
San Acacia	17	South of San Antonio	-	-	1(0)	-	-	-	-	-	-	1
San Acacia	18	San Marcial	-	2(0)	-	-	-	-	-	-	-	2
San Acacia	19	South of San Marcial 1	-	1(1)	-	-	-	-	-	-	-	1
San Acacia	20	South of San Marcial 2	-	-	1(1)	-	-	-	-	-	-	1
<i>San Acacia Totals</i>			-	74	35	-	-	-	-	-	-	109
Monthly Totals			-	111	119	-	-	-	-	-	-	230

Table 8. Summary of the abundance of Rio Grande Silvery Minnow, by reach, site and mesohabitat, during May 2017, **based on standard sites**. Blank cells indicate site-specific mesohabitats that were unavailable for sampling.

Reach	Site	Locality	BW	PO	RU	SHPO	SHRU	Total
Angostura	1	Angostura Dam	-		-	-	-	0
Angostura	2	Bernalillo			-	-	-	0
Angostura	3	Rio Rancho		-		-	1	1
Angostura	4	Central Ave.			-	21	7	28
Angostura	5	Rio Bravo Blvd.	-	-	2	8	4	14
<i>Angostura Totals</i>			-	-	2	29	12	43
Isleta	6	Los Lunas		-	-	-	-	0
Isleta	7	Belen	2	-	-	-	-	2
Isleta	8	Jarales		2	-	-	-	2
Isleta	9	Bernardo		-	-	-	-	0
Isleta	10	La Joya				1	-	1
Isleta	11	North of San Acacia			-	-	-	0
<i>Isleta Totals</i>			2	2	-	1	-	5
San Acacia	12	San Acacia Dam		-	-	-	2	2
San Acacia	13	South of San Acacia			5	3	4	12
San Acacia	14	Socorro		-	-	-	-	0
San Acacia	15	North of San Antonio		-	-	2	-	2
San Acacia	16	San Antonio			-	-	1	1
San Acacia	17	South of San Antonio		-	-	1	-	1
San Acacia	18	San Marcial		-	-	-	-	0
San Acacia	19	South of San Marcial 1		-	-	-	-	0
San Acacia	20	South of San Marcial 2			-	1	-	1
<i>San Acacia Totals</i>			-	-	5	7	7	19
Monthly Totals			2	2	7	37	19	67

Table 9. Summary of the abundance of Rio Grande Silvery Minnow, by reach, site and mesohabitat, during May 2017, **based on all sites**. Blank cells indicate site-specific mesohabitats that were unavailable for sampling.

Reach	Site	Locality	BW	PO	RU	SHPO	SHRU	Total
Angostura	1	Angostura Dam	-		-	-	-	0
Angostura	2	Bernalillo			-	-	-	0
Angostura	3	Rio Rancho		-		-	1	1
Angostura	21	Site 21			-	1	2	3
Angostura	22	Site 22		-		-	-	0
Angostura	23	Site 23			1	-	-	1
Angostura	24	Site 24			-	6	4	10
Angostura	4	Central Ave.			-	21	7	28
Angostura	5	Rio Bravo Blvd.	-	-	2	8	4	14
Angostura	25	Site 25		-	1	4	6	11
<i>Angostura Totals</i>			-	-	4	40	24	68
Isleta	26	Site 26				3	4	7
Isleta	6	Los Lunas		-	-	-	-	0
Isleta	27	Site 27			-	1	1	2
Isleta	7	Belen	2	-	-	-	-	2
Isleta	8	Jarales		2	-	-	-	2
Isleta	28	Site 28		-	-	-	1	1
Isleta	9	Bernardo		-	-	-	-	0
Isleta	10	La Joya				1	-	1
Isleta	29	Site 29		-	-	-	1	1
Isleta	11	North of San Acacia			-	-	-	0
<i>Isleta Totals</i>			2	2	-	5	7	16
San Acacia	12	San Acacia Dam		-	-	-	2	2
San Acacia	13	South of San Acacia			5	3	4	12
San Acacia	30	Site 30		1		14	1	16
San Acacia	14	Socorro		-	-	-	-	0
San Acacia	15	North of San Antonio		-	-	2	-	2
San Acacia	16	San Antonio			-	-	1	1
San Acacia	17	South of San Antonio		-	-	1	-	1
San Acacia	18	San Marcial		-	-	-	-	0
San Acacia	19	South of San Marcial 1		-	-	-	-	0
San Acacia	20	South of San Marcial 2			-	1	-	1
<i>San Acacia Totals</i>			-	1	5	21	8	35
Monthly Totals			2	3	9	66	39	119

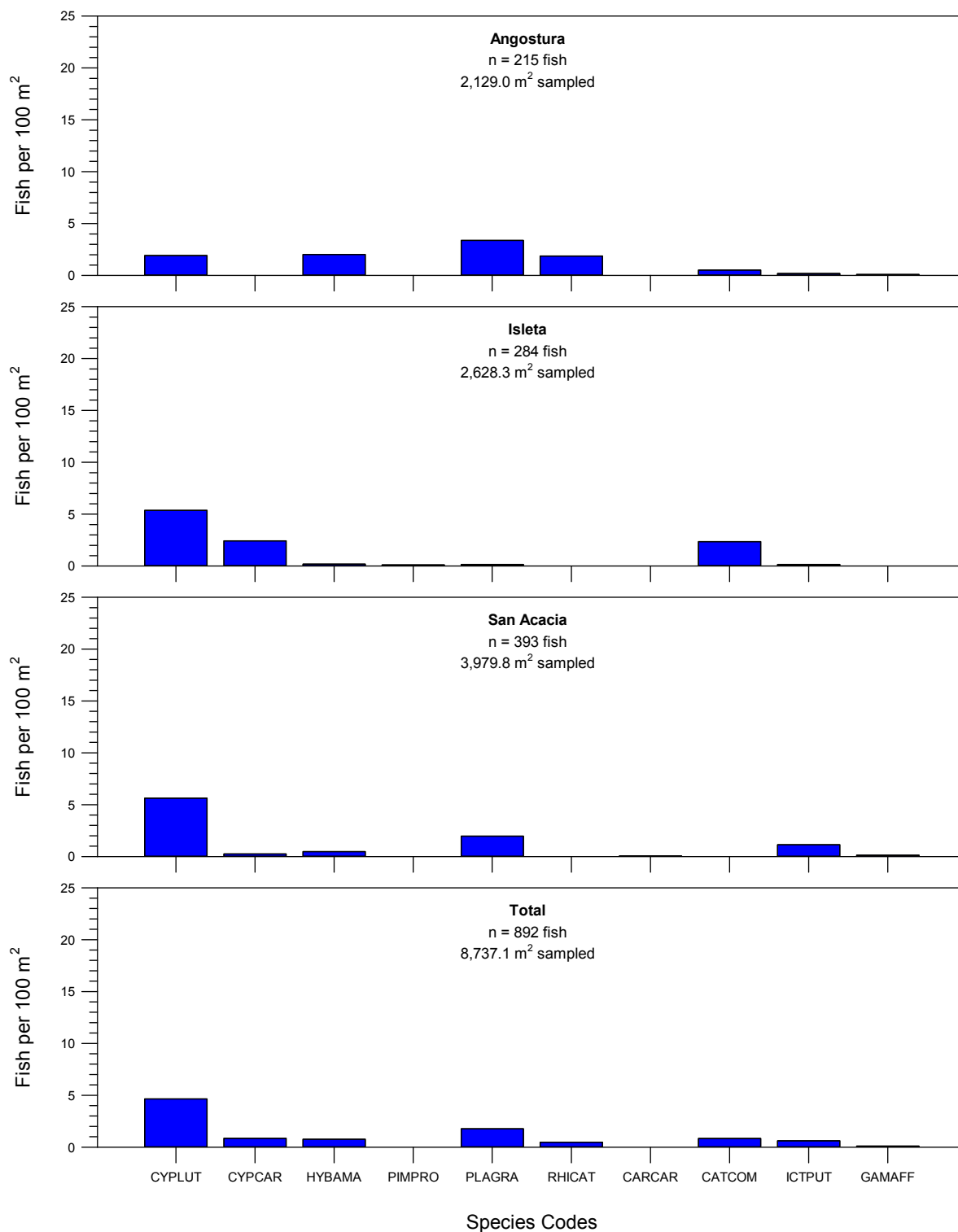


Figure 3. Fish densities during May 2017 for each focal species (see Table 1 for species codes), by sampling reach, in the Middle Rio Grande, **based on standard sites**. Note: all marked and unmarked individuals are included.

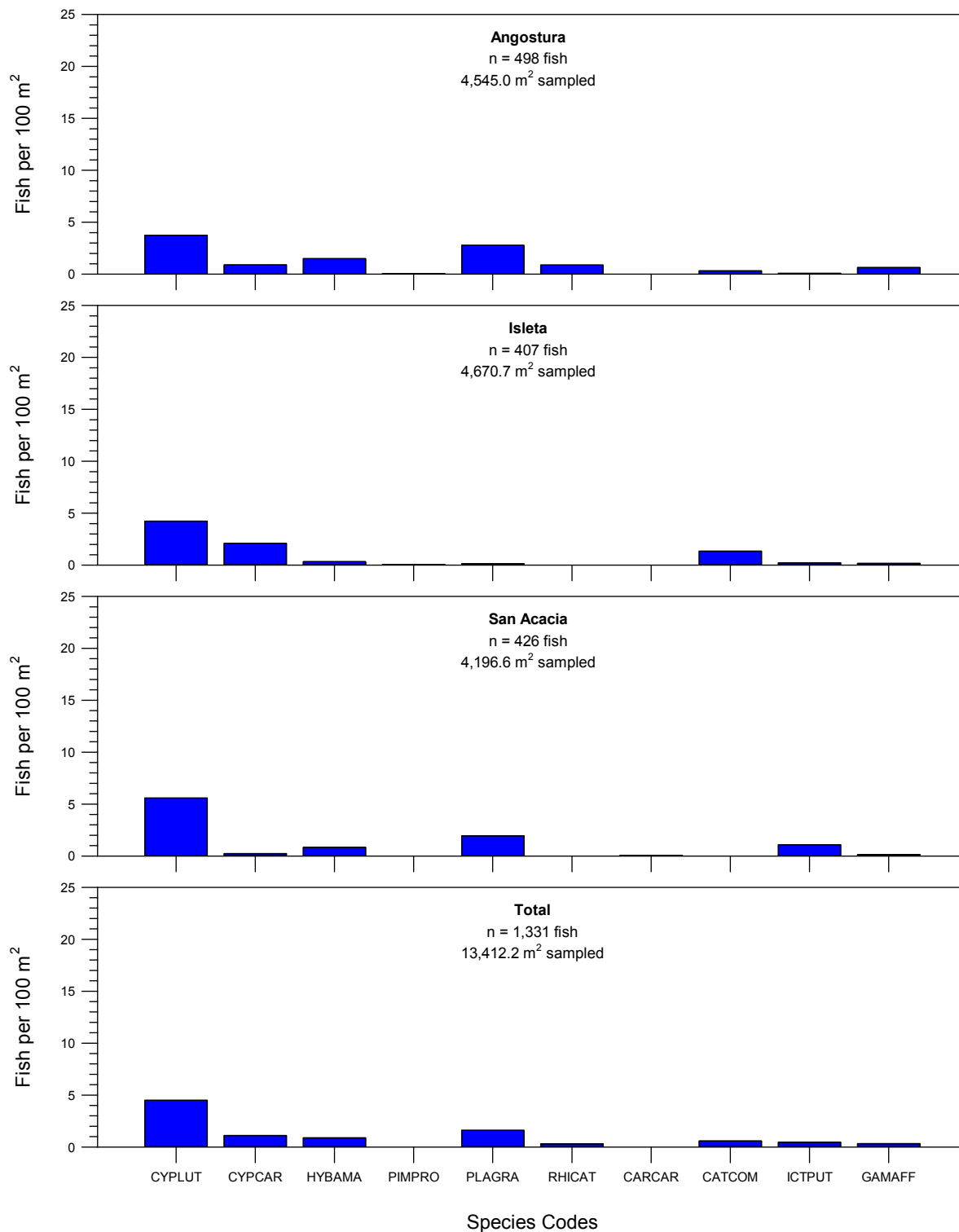


Figure 4. Fish densities during May 2017 for each focal species (see Table 1 for species codes), by sampling reach, in the Middle Rio Grande, **based on all sites**. Note: all marked and unmarked individuals are included.

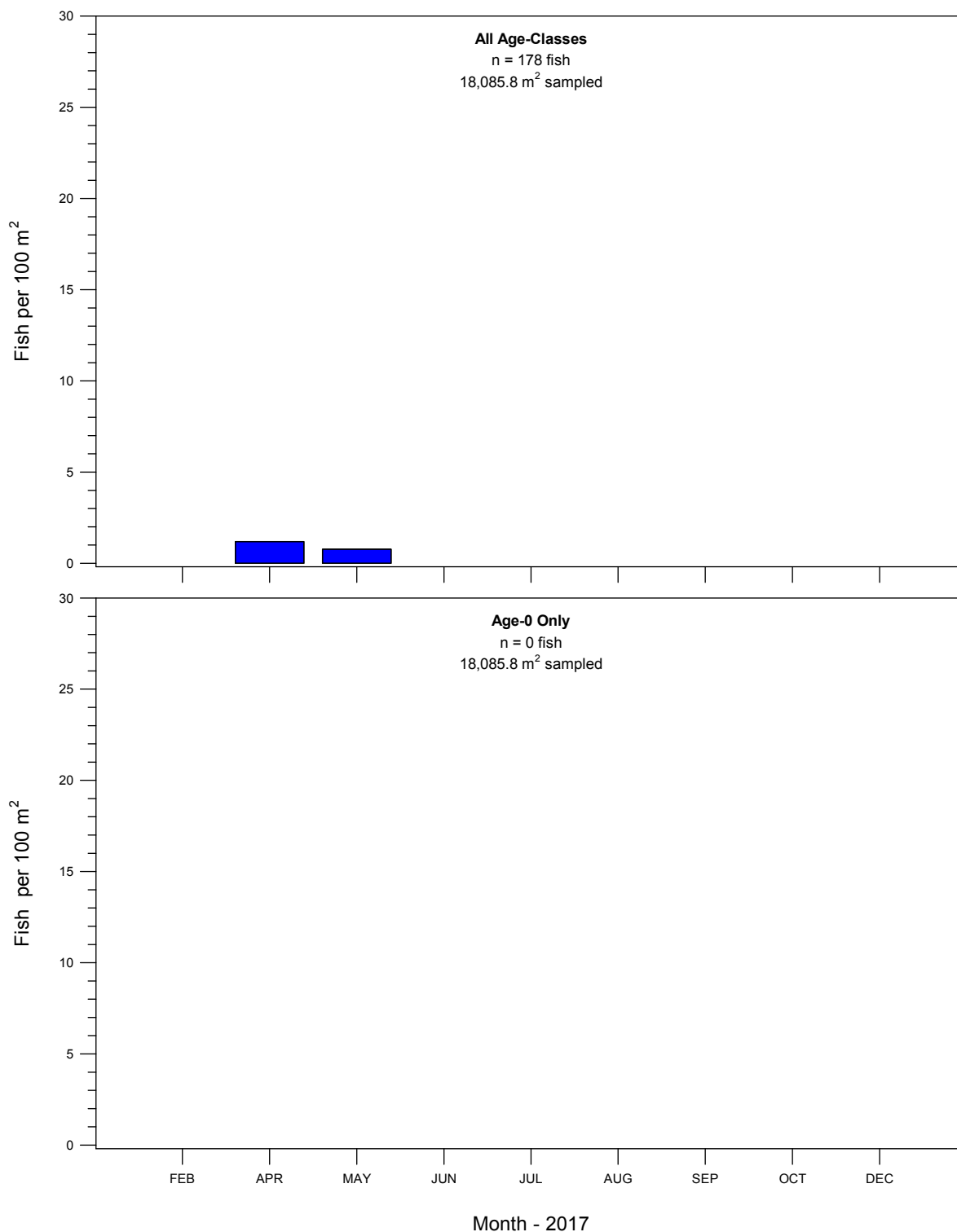


Figure 5. Rio Grande Silvery Minnow densities (all age-classes and age-0 only) during 2017, by sampling month, in the Middle Rio Grande, **based on standard sites**. Note: all marked and unmarked individuals are included. Sampling was not conducted in February of 2017.

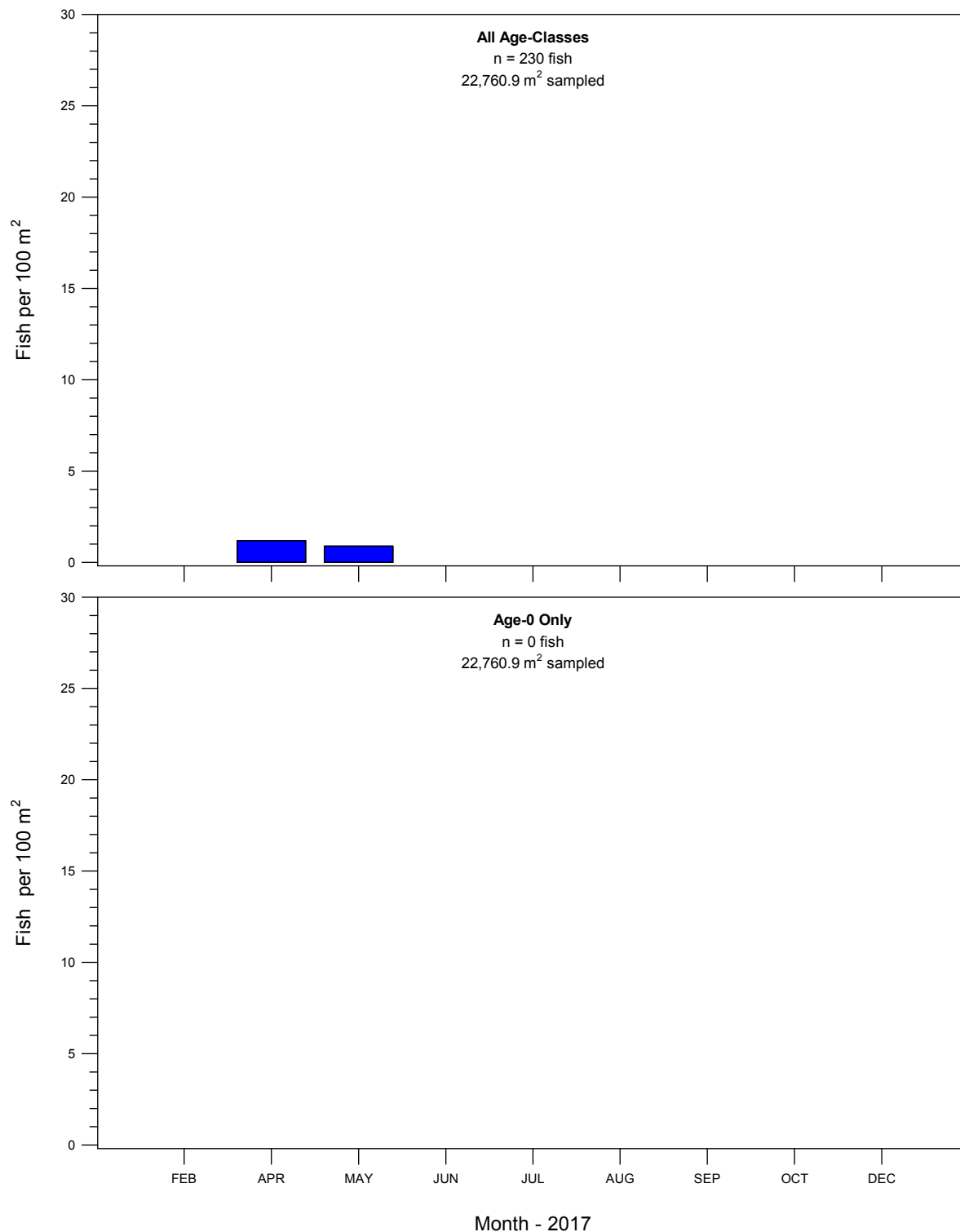


Figure 6. Rio Grande Silvery Minnow densities (all age-classes and age-0 only) during 2017, by sampling month, in the Middle Rio Grande, **based on all sites**. Note: all marked and unmarked individuals are included. Sampling was not conducted in February of 2017.

APPENDIX A (Sampling Sites)

Middle Rio Grande Fish Sampling Sites

Table A - 1. Sampling reaches and **standard sites** for population monitoring of Rio Grande Silvery Minnow in the Middle Rio Grande, NM.

Reach and Site	Locality
Angostura Reach	
1	New Mexico, Sandoval County, Rio Grande, downstream of Angostura Diversion Dam, Algodones. River Mile: 209.7; UTM Easting: 363811; UTM Northing: 3916006; Zone: 13S; Datum: NAD27
2	New Mexico, Sandoval County, Rio Grande, upstream of US Highway 550 bridge crossing, Bernalillo. River Mile: 203.8; UTM Easting: 358543; UTM Northing: 3909722; Zone: 13S; Datum: NAD27
3	New Mexico, Sandoval County, Rio Grande, ca. 4.0 miles downstream of US Highway 550 bridge crossing, east and upstream of Rio Rancho Wastewater Treatment Plant, Rio Rancho. River Mile: 200.0; UTM Easting: 354772; UTM Northing: 3905355; Zone: 13S; Datum: NAD27
4	New Mexico, Bernalillo County, Rio Grande, upstream of Central Avenue (US Highway 66) bridge crossing, Albuquerque. River Mile: 183.4; UTM Easting: 346840; UTM Northing: 3884094; Zone: 13S; Datum: NAD27
5	New Mexico, Bernalillo County, Rio Grande, upstream of Rio Bravo Boulevard bridge crossing, Albuquerque. River Mile: 178.3; UTM Easting: 347554; UTM Northing: 3877163; Zone: 13S; Datum: NAD27
Isleta Reach	
6	New Mexico, Valencia County, Rio Grande, ca. 0.3 miles upstream of Los Lunas (NM State Highway 49) bridge crossing, Los Lunas. River Mile: 161.4; UTM Easting: 342898; UTM Northing: 3852531; Zone: 13S; Datum: NAD27
7	New Mexico, Valencia County, Rio Grande, ca. 1.0 miles upstream of NM State Highway 309/6 bridge crossing, Belen. River Mile: 151.5; UTM Easting: 339972; UTM Northing: 3837061; Zone: 13S; Datum: NAD27
8	New Mexico, Valencia County, Rio Grande, ca. 2.2 miles upstream of NM State Highway 346 bridge crossing, Jarales. River Mile: 143.2; UTM Easting: 338136; UTM Northing: 3827329; Zone: 13S; Datum: NAD27
9	New Mexico, Socorro County, Rio Grande, upstream of US Highway 60 bridge crossing, Bernardo. River Mile: 130.6; UTM Easting: 334604; UTM Northing: 3809726; Zone: 13S; Datum: NAD27
10	New Mexico, Socorro County, Rio Grande, ca. 3.5 miles downstream of US Highway 60 bridge crossing, La Joya. River Mile: 127.0; UTM Easting: 331094; UTM Northing: 3805229; Zone: 13S; Datum: NAD27
11	New Mexico, Socorro County, Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia. River Mile: 116.8; UTM Easting: 327902; UTM Northing: 3792603; Zone: 13S; Datum: NAD27

Table A - 1. Sampling reaches and **standard sites** for population monitoring of Rio Grande Silvery Minnow in the Middle Rio Grande, NM (continued).

Reach and Site	Locality
San Acacia Reach	
12	New Mexico, Socorro County, Rio Grande, downstream of San Acacia Diversion Dam, San Acacia. River Mile: 116.2; UTM Easting: 326162; UTM Northing: 3791977; Zone: 13S; Datum: NAD27
13	New Mexico, Socorro County, Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia. River Mile: 114.6; UTM Easting: 325263; UTM Northing: 3790442; Zone: 13S; Datum: NAD27
14	New Mexico, Socorro County, Rio Grande, ca. 0.5 miles upstream of the Low Flow Conveyance Channel bridge, east and upstream of Socorro Wastewater Treatment Plant, Socorro. River Mile: 99.5; UTM Easting: 327097; UTM Northing: 3771043; Zone: 13S; Datum: NAD27
15	New Mexico, Socorro County, Rio Grande, ca. 4.0 miles upstream of US Highway 380 bridge crossing, San Antonio. River Mile: 91.7; UTM Easting: 328140; UTM Northing: 3761283; Zone: 13S; Datum: NAD27
16	New Mexico, Socorro County, Rio Grande, upstream of US Highway 380 bridge crossing, San Antonio. River Mile: 87.1; UTM Easting: 328914; UTM Northing: 3754471; Zone: 13S; Datum: NAD27
17	New Mexico, Socorro County, Rio Grande, directly east of Bosque del Apache National Wildlife Refuge headquarters, San Antonio. River Mile: 79.1; UTM Easting: 327055; UTM Northing: 3740839; Zone: 13S; Datum: NAD27
18	New Mexico, Socorro County, Rio Grande, downstream of the San Marcial railroad crossing, San Marcial. River Mile: 68.6; UTM Easting: 315284; UTM Northing: 3728347; Zone: 13S; Datum: NAD27
19	New Mexico, Socorro County, Rio Grande, ca. 8.0 miles downstream of the San Marcial Railroad Bridge crossing, San Marcial. River Mile: 60.5; UTM Easting: 309487; UTM Northing: 3718178; Zone: 13S; Datum: NAD27
20	New Mexico, Socorro County, Rio Grande, ca. 10.0 miles downstream of the San Marcial Railroad Bridge crossing, San Marcial. River Mile: 58.8; UTM Easting: 307846; UTM Northing: 3716150; Zone: 13S; Datum: NAD27

Table A - 2. Sampling reaches and **additional sites** for population monitoring of Rio Grande Silvery Minnow in the Middle Rio Grande, NM.

Reach and Site	Locality
Angostura Reach	
21	New Mexico, Sandoval County, Rio Grande, ca. 4.4 miles upstream of Alameda Blvd. (NM State Hwy. 528) bridge crossing, Corrales. River Mile: 196.6; UTM Easting: 355531; UTM Northing: 3900626; Zone: 13S; Datum: NAD83
22	New Mexico, Sandoval County, Rio Grande, ca. 1.1 miles upstream of Alameda Blvd. (NM State Hwy. 528) bridge crossing, Corrales. River Mile: 193.1; UTM Easting: 351562; UTM Northing: 3897190; Zone: 13S; Datum: NAD83
23	New Mexico, Bernalillo County, Rio Grande, ca. 1.0 miles downstream of Paseo del Norte Blvd. (NM State Hwy. 423) bridge crossing Albuquerque. River Mile: 190.0; UTM Easting: 349214; UTM Northing: 3893063; Zone: 13S; Datum: NAD83
24	New Mexico, Bernalillo County, Rio Grande, ca. 1.1 miles upstream of I-40 bridge crossing, Albuquerque. River Mile: 186.1; UTM Easting: 346011; UTM Northing: 3887973; Zone: 13S; Datum: NAD83
25	New Mexico, Bernalillo County, Rio Grande, ca. 1.5 miles upstream of I-25 bridge crossing, Isleta. River Mile: 174.0; UTM Easting: 345900; UTM Northing: 3870990; Zone: 13S; Datum: NAD83
Isleta Reach	
26	New Mexico, Valencia County, Rio Grande, ca. 4.1 miles upstream of NM State Hwy. 6 bridge crossing, Los Lunas. River Mile: 165.2; UTM Easting: 342799; UTM Northing: 3858637; Zone: 13S; Datum: NAD83
27	New Mexico, Valencia County, Rio Grande, ca. 6.2 miles upstream of NM State Hwy. 309 bridge crossing, Belen. River Mile: 156.0; UTM Easting: 340647; UTM Northing: 3845146; Zone: 13S; Datum: NAD83
28	New Mexico, Socorro County, Rio Grande, ca. 6.3 miles upstream of U.S. Hwy. 60 bridge crossing, Bernardo. River Mile: 137.1; UTM Easting: 335554; UTM Northing: 3819543; Zone: 13S; Datum: NAD83
29	New Mexico, Socorro County, Rio Grande, ca. 1.5 miles upstream of confluence with the Rio Salado, San Acacia. River Mile: 120.1; UTM Easting: 330498; UTM Northing: 3795053; Zone: 13S; Datum: NAD83
San Acacia Reach	
30	New Mexico, Socorro County, Rio Grande, ca. 2.6 miles upstream of Pueblitos Rd. bridge crossing, Escondida. River Mile: 107.1; UTM Easting: 326303; UTM Northing: 3781123; Zone: 13S; Datum: NAD83

APPENDIX B (Site-Specific Ichthyofaunal Composition)

Site-specific ichthyofaunal composition during the May 2017
Rio Grande Silvery Minnow population monitoring study,
based on standard and additional sites

Monthly and annual reports, along with raw data, are available at:
<http://mrgescp.dbstephens.com>

**** Data are provisional and should be verified by direct inspection of field data ****

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)
May 2017**

NEW MEXICO: SANDOVAL Co., RIO GRANDE Drainage
Rio Grande, directly below Angostura Diversion Dam, Algodones.

RKD17-068

Site Number: 1 River Mile: 209.7 04 May 2017
UTM Easting: 363811 UTM Northing: 3916006 Zone: 13 Quad: San Felipe Pueblo
R.K. Dudley, J.L. Kennedy, C.A. Peralta Effort: 398.5 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	5
76	<i>Platygobio gracilis</i>	3
76	<i>Rhinichthys cataractae</i>	7
81	<i>Catostomus commersonii</i>	3
212	<i>Gambusia affinis</i>	2
283	<i>Morone chrysops</i>	1
294	<i>Lepomis cyanellus</i>	1

NEW MEXICO: SANDOVAL Co., RIO GRANDE Drainage
Rio Grande, at US HWY 550 (formerly NM State HWY 44) bridge crossing,
Bernalillo.

RKD17-069

Site Number: 2 River Mile: 203.8 04 May 2017
UTM Easting: 358543 UTM Northing: 3909722 Zone: 13 Quad: Bernalillo
R.K. Dudley, J.L. Kennedy, C.A. Peralta Effort: 457.6 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	22
76	<i>Platygobio gracilis</i>	22
76	<i>Rhinichthys cataractae</i>	17
81	<i>Catostomus commersonii</i>	5

Rio Grande Silvery Minnow Population Monitoring (Standard Sites) **May 2017**

NEW MEXICO: SANDOVAL Co., RIO GRANDE Drainage

RKD17-070

Rio Grande, ca. 4.0 miles downstream of US HWY 550 (formerly NM State HWY 44)
bridge crossing, at Rio Rancho Wastewater Treatment Plant, Rio Rancho.

Site Number: 3

River Mile: 200.0

04 May 2017

UTM Easting: 354772 UTM Northing: 3905355 Zone: 13

Quad: Bernalillo

R.K. Dudley, J.L. Kennedy, C.A. Peralta

Effort: 407.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	1
76	<i>Hybognathus amarus</i> *	1
76	<i>Platygobio gracilis</i>	10
76	<i>Rhinichthys cataractae</i>	12
93	<i>Ictalurus punctatus</i>	1

***Hybognathus amarus (age-classes):**

age-0	
age-1	1
age-2+	

NEW MEXICO: BERNALILLO Co., RIO GRANDE Drainage

RKD17-067

Rio Grande, at Central Avenue bridge crossing (US HWY 66), Albuquerque.

Site Number: 4

River Mile: 183.4

04 May 2017

UTM Easting: 346840 UTM Northing: 3884094 Zone: 13

Quad: Albuquerque West

R.K. Dudley, J.L. Kennedy, C.A. Peralta

Effort: 428.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	8
76	<i>Hybognathus amarus</i> *	28
76	<i>Platygobio gracilis</i>	8
76	<i>Rhinichthys cataractae</i>	1
81	<i>Catostomus commersonii</i>	3
93	<i>Ictalurus punctatus</i>	2

***Hybognathus amarus (age-classes):**

age-0	
age-1	28
age-2+	

Rio Grande Silvery Minnow Population Monitoring (Standard Sites) **May 2017**

NEW MEXICO: BERNALILLO Co., RIO GRANDE Drainage
 Rio Grande, at Rio Bravo Blvd. Bridge crossing (NM State HWY 500) crossing,
 Albuquerque.

RKD17-066

Site Number: 5 River Mile: 178.3 04 May 2017
 UTM Easting: 347554 UTM Northing: 3877163 Zone: 13 Quad: Albuquerque West
 R.K. Dudley, J.L. Kennedy, C.A. Peralta Effort: 437.8 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	5
76	<i>Hybognathus amarus*</i>	14
76	<i>Platygobio gracilis</i>	29
76	<i>Rhinichthys cataractae</i>	3
93	<i>Ictalurus punctatus</i>	1

***Hybognathus amarus (age-classes):**

age-0
 age-1 14
 age-2+

NEW MEXICO: VALENCIA Co., RIO GRANDE Drainage
 Rio Grande, at Los Lunas Bridge crossing (NM State HWY 49), Los Lunas.

RKD17-065

Site Number: 6 River Mile: 161.4 03 May 2017
 UTM Easting: 342898 UTM Northing: 3852531 Zone: 13 Quad: Los Lunas
 R.K. Dudley, J.L. Kennedy, S.L. Clark Barkalow Effort: 454.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	1
76	<i>Cyprinus carpio</i>	64
76	<i>Pimephales promelas</i>	3
81	<i>Catostomus commersonii</i>	62
93	<i>Ictalurus punctatus</i>	1

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)
May 2017**

NEW MEXICO: VALENCIA Co., RIO GRANDE Drainage
Rio Grande, ca. 1.0 miles upstream of NM State HWY 309/6 bridge crossing, Belen.

RKD17-064

Site Number: 7 River Mile: 151.5
UTM Easting: 339972 UTM Northing: 3837061 Zone: 13 Quad: Tome
R.K. Dudley, J.L. Kennedy, S.L. Clark Barkalow

03 May 2017
Effort: 416.3 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	6
76	<i>Hybognathus amarus</i> *	2

***Hybognathus amarus (age-classes):**

age-0	
age-1	2
age-2+	

NEW MEXICO: VALENCIA Co., RIO GRANDE Drainage
Rio Grande, ca. 2.2 miles upstream of NM State HWY 346 bridge crossing, Jarales.

RKD17-063

Site Number: 8 River Mile: 143.2
UTM Easting: 338136 UTM Northing: 3827329 Zone: 13 Quad: Veguita
R.K. Dudley, J.L. Kennedy, S.L. Clark Barkalow

03 May 2017
Effort: 425.5 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	54
76	<i>Hybognathus amarus</i> *	2

***Hybognathus amarus (age-classes):**

age-0	
age-1	2
age-2+	

Rio Grande Silvery Minnow Population Monitoring (Standard Sites) May 2017

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, at US HWY 60 bridge crossing, Bernardo.

RKD17-062

Site Number: 9 River Mile: 130.6 03 May 2017
UTM Easting: 334604 UTM Northing: 3809726 Zone: 13 Quad: Abeytas
R.K. Dudley, J.L. Kennedy, S.L. Clark Barkalow Effort: 436.4 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	70
212 <i>Gambusia affinis</i>	1

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, ca. 3.5 miles downstream of the US HWY 60 bridge crossing, Bernardo.

RKD17-061

Site Number: 10 River Mile: 127.0 03 May 2017
UTM Easting: 331094 UTM Northing: 3805229 Zone: 13 Quad: Abeytas
R.K. Dudley, J.L. Kennedy, S.L. Clark Barkalow Effort: 424.4 sq. m

<u>FAMILY</u>	<u>N</u>
76 <i>Cyprinella lutrensis</i>	8
76 <i>Hybognathus amarus</i> *	1
93 <i>Ictalurus punctatus</i>	2

***Hybognathus amarus (age-classes):**

age-0	
age-1	1
age-2+	

Rio Grande Silvery Minnow Population Monitoring (Standard Sites)
May 2017

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, ca. 0.6 miles upstream of San Acacia Diversion Dam, San Acacia

RKD17-060

Site Number: 11 River Mile: 116.8 02 May 2017
UTM Easting: 327902 UTM Northing: 3792603 Zone: 13 Quad: La Joya
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 471.6 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	2
76	<i>Platygobio gracilis</i>	4
93	<i>Ictalurus punctatus</i>	1

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, directly below San Acacia Diversion Dam, San Acacia.

RKD17-059

Site Number: 12 River Mile: 116.2 02 May 2017
UTM Easting: 326162 UTM Northing: 3791977 Zone: 13 Quad: San Acacia
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 425.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	120
76	<i>Hybognathus amarus</i> *	2
76	<i>Platygobio gracilis</i>	2
76	<i>Rhinichthys cataractae</i>	1
81	<i>Carpodes carpio</i>	1
93	<i>Ictalurus punctatus</i>	6

***Hybognathus amarus (age-classes):**

age-0	
age-1	1
age-2+	1

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)
May 2017**

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, ca. 1.5 miles downstream of San Acacia Diversion Dam, San Acacia.

RKD17-058

Site Number: 13 River Mile: 114.6 02 May 2017
UTM Easting: 325263 UTM Northing: 3790442 Zone: 13 Quad: Lemitar
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 465.4 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	39
76	<i>Hybognathus amarus</i> *	12
76	<i>Platygobio gracilis</i>	59
93	<i>Ictalurus punctatus</i>	2
93	<i>Pylodictis olivaris</i>	1
212	<i>Gambusia affinis</i>	5

***Hybognathus amarus (age-classes):**

age-0
age-1 12
age-2+

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, east of Socorro, 0.5 miles upstream of Socorro Low Flow Conveyance
Channel bridge and east just upstream of Socorro Wastewater Treatment Plant,

RKD17-057

Site Number: 14 River Mile: 99.5 02 May 2017
UTM Easting: 327097 UTM Northing: 3771043 Zone: 13 Quad: Loma de las Canas
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 459.4 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	34
76	<i>Platygobio gracilis</i>	10
93	<i>Ictalurus punctatus</i>	16

Rio Grande Silvery Minnow Population Monitoring (Standard Sites) **May 2017**

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
 Rio Grande, ca. 4.0 miles upstream of U.S. 380 bridge crossing.

RKD17-056

Site Number: 15 River Mile: 91.7 02 May 2017
 UTM Easting: 328140 UTM Northing: 3761283 Zone: 13 Quad: San Antonio
 R.K. Dudley, W.H. Brandenburg, J.L. Kennedy Effort: 438.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	5
76	<i>Cyprinus carpio</i>	1
76	<i>Hybognathus amarus</i> *	2
81	<i>Carpodes carpio</i>	1
93	<i>Ictalurus punctatus</i>	2

***Hybognathus amarus (age-classes):**

age-0
 age-1 2
 age-2+

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
 Rio Grande, at US HWY 380 bridge crossing, San Antonio.

RKD17-055

Site Number: 16 River Mile: 87.1 01 May 2017
 UTM Easting: 328914 UTM Northing: 3754471 Zone: 13 Quad: San Antonio
 W.H. Brandenburg, S.L. Clark Barkalow, C. A. Peralta Effort: 497.7 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Hybognathus amarus</i> *	1
76	<i>Platygobio gracilis</i>	6
93	<i>Ictalurus punctatus</i>	15

***Hybognathus amarus (age-classes):**

age-0
 age-1 1
 age-2+

**Rio Grande Silvery Minnow Population Monitoring (Standard Sites)
May 2017**

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, directly east of Bosque del Apache National Wildlife Refuge
Headquarters.

RKD17-054

Site Number: 17 River Mile: 79.1 01 May 2017
UTM Easting: 327055 UTM Northing: 3740839 Zone: 13 Quad: San Antonio SE
W.H. Brandenburg, S.L. Clark Barkalow, C. A. Peralta Effort: 427.5 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Hybognathus amarus</i> *	1

***Hybognathus amarus (age-classes):**

age-0	
age-1	1
age-2+	

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, at San Marcial Railroad Bridge, San Marcial.

RKD17-053

Site Number: 18 River Mile: 68.6 01 May 2017
UTM Easting: 315284 UTM Northing: 3728347 Zone: 13 Quad: San Marcial
W.H. Brandenburg, S.L. Clark Barkalow, C. A. Peralta Effort: 397.9 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	18
76	<i>Platygobio gracilis</i>	1
93	<i>Ictalurus furcatus</i>	1

Rio Grande Silvery Minnow Population Monitoring (Standard Sites) May 2017

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, ca. 8 miles downstream of the San Marcial railroad bridge crossing

RKD17-052

Site Number: 19 River Mile: 60.5 01 May 2017
UTM Easting: 309487 UTM Northing: 3718178 Zone: 13 Quad: Paraje Well
W.H. Brandenburg, S.L. Clark Barkalow, C. A. Peralta Effort: 429.0 sq. m

<u>FAMILY</u>		<u>N</u>
69	<i>Dorosoma cepedianum</i>	2
76	<i>Cyprinella lutrensis</i>	1
76	<i>Cyprinus carpio</i>	5
81	<i>Ictiobus bubalus</i>	1
93	<i>Ictalurus punctatus</i>	1

NEW MEXICO: SOCORRO Co., RIO GRANDE Drainage
Rio Grande, ca. 10 mi downstream of the San Marcial railroad bridge crossing

RKD17-051

Site Number: 20 River Mile: 58.8 01 May 2017
UTM Easting: 307846 UTM Northing: 3716150 Zone: 13 Quad: Paraje Well
W.H. Brandenburg, S.L. Clark Barkalow, C. A. Peralta Effort: 440.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	7
76	<i>Cyprinus carpio</i>	4
76	<i>Hybognathus amarus*</i>	1
81	<i>Ictiobus bubalus</i>	3
93	<i>Ictalurus furcatus</i>	1
93	<i>Ictalurus punctatus</i>	3

***Hybognathus amarus (age-classes):**

age-0
age-1 1
age-2+

Rio Grande Silvery Minnow Population Monitoring (Additional Sites) May 2017

NEW MEXICO: Sandoval Co., RIO GRANDE Drainage

RKD17-050

Rio Grande, ca. 4.4 miles upstream of Alameda Blvd. (NM State Hwy. 528) bridge crossing, Corrales

Site Number: 21

River Mile: 196.6

27 April 2017

UTM Easting: 355531

UTM Northing: 3900626

Zone: 13

Quad: Alameda

R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

Effort: 491.7 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	1
76	<i>Hybognathus amarus*</i>	3
76	<i>Platygobio gracilis</i>	2
81	<i>Catostomus commersonii</i>	2

***Hybognathus amarus (age-classes):**

age-0	
age-1	3
age-2+	

NEW MEXICO: Sandoval Co., RIO GRANDE Drainage

RKD17-049

Rio Grande, ca. 1.1 miles upstream of Alameda Blvd. (NM State Hwy. 528) bridge crossing, Corrales

Site Number: 22

River Mile: 193.1

27 April 2017

UTM Easting: 351562

UTM Northing: 3897190

Zone: 13

Quad: Los Griegos

R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

Effort: 472.7 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	5
76	<i>Cyprinus carpio</i>	40
76	<i>Platygobio gracilis</i>	15
212	<i>Gambusia affinis</i>	1

Rio Grande Silvery Minnow Population Monitoring (Additional Sites) **May 2017**

NEW MEXICO: Bernalillo Co., RIO GRANDE Drainage

RKD17-048

Rio Grande, ca. 1.0 miles downstream of Paseo del Norte Blvd. (NM State Hwy. 423)
bridge crossing Albuquerque

Site Number: 23

River Mile: 190.0

26 April 2017

UTM Easting: 349214

UTM Northing: 3893063

Zone: 13

Quad: Albuquerque West

R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

Effort: 513.1 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Hybognathus amarus*</i>	1
76	<i>Platygobio gracilis</i>	3
81	<i>Catostomus commersonii</i>	1

***Hybognathus amarus (age-classes):**

age-0	
age-1	1
age-2+	

NEW MEXICO: Bernalillo Co., RIO GRANDE Drainage

RKD17-047

Rio Grande, ca. 1.1 miles upstream of I-40 bridge crossing, Albuquerque

Site Number: 24

River Mile: 186.1

26 April 2017

UTM Easting: 346011

UTM Northing: 3887973

Zone: 13

Quad: Albuquerque West

R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

Effort: 442.0 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	64
76	<i>Cyprinus carpio</i>	1
76	<i>Hybognathus amarus*</i>	10
76	<i>Pimephales promelas</i>	1
76	<i>Platygobio gracilis</i>	30
81	<i>Catostomus commersonii</i>	1

***Hybognathus amarus (age-classes):**

age-0	
age-1	10
age-2+	

Rio Grande Silvery Minnow Population Monitoring (Additional Sites) May 2017

NEW MEXICO: Bernalillo Co., RIO GRANDE Drainage
Rio Grande, ca. 1.5 miles upstream of I-25 bridge crossing, Isleta

RKD17-046

Site Number: 25 River Mile: 174.0
UTM Easting: 345900 UTM Northing: 3870990 Zone: 13 Quad: Isleta
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

26 April 2017
Effort: 496.5 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	59
76	<i>Hybognathus amarus</i> *	11
76	<i>Pimephales promelas</i>	2
76	<i>Platygobio gracilis</i>	4
212	<i>Gambusia affinis</i>	26

***Hybognathus amarus (age-classes):**

age-0	
age-1	11
age-2+	

NEW MEXICO: Valencia Co., RIO GRANDE Drainage
Rio Grande, ca. 4.1 miles upstream of NM State Hwy. 6 bridge crossing, Los Lunas

RKD17-045

Site Number: 26 River Mile: 165.2
UTM Easting: 342799 UTM Northing: 3858637 Zone: 13 Quad: Los Lunas
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy

26 April 2017
Effort: 502.6 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	29
76	<i>Cyprinus carpio</i>	1
76	<i>Hybognathus amarus</i> *	7
76	<i>Platygobio gracilis</i>	1
93	<i>Ictalurus punctatus</i>	2
212	<i>Gambusia affinis</i>	5
294	<i>Micropterus salmoides</i>	1

***Hybognathus amarus (age-classes):**

age-0	
age-1	7
age-2+	

**Rio Grande Silvery Minnow Population Monitoring (Additional Sites)
May 2017**

NEW MEXICO: Valencia Co., RIO GRANDE Drainage
Rio Grande, ca. 6.2 miles upstream of NM State Hwy. 309 bridge crossing, Belen

RKD17-044

Site Number: 27 River Mile: 156.0
UTM Easting: 340647 UTM Northing: 3845146 Zone: 13 Quad: Belen
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy, C.A. Peralta

25 April 2017
Effort: 514.3 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Hybognathus amarus</i> *	2

***Hybognathus amarus (age-classes):**

age-0	
age-1	2
age-2+	

NEW MEXICO: Socorro Co., RIO GRANDE Drainage
Rio Grande, ca. 6.3 miles upstream of U.S. Hwy. 60 bridge crossing, Bernardo

RKD17-043

Site Number: 28 River Mile: 137.1
UTM Easting: 335554 UTM Northing: 3819543 Zone: 13 Quad: Abeytas
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy, C.A. Peralta

25 April 2017
Effort: 503.7 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	18
76	<i>Cyprinus carpio</i>	1
76	<i>Hybognathus amarus</i> *	1
76	<i>Platygobio gracilis</i>	1
93	<i>Ictalurus punctatus</i>	5

***Hybognathus amarus (age-classes):**

age-0	
age-1	1
age-2+	

Rio Grande Silvery Minnow Population Monitoring (Additional Sites) May 2017

NEW MEXICO: Socorro Co., RIO GRANDE Drainage
Rio Grande, ca. 1.5 miles upstream of confluence with the Rio Salado, San Acacia

RKD17-042

Site Number: 29 River Mile: 120.1 25 April 2017
UTM Easting: 330498 UTM Northing: 3795053 Zone: 13 Quad: Mesa del Yeso
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy, C.A. Peralta Effort: 521.9 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	10
76	<i>Cyprinus carpio</i>	32
76	<i>Hybognathus amarus*</i>	1
76	<i>Platygobio gracilis</i>	1
81	<i>Carpionodes carpio</i>	2
81	<i>Catostomus commersonii</i>	1
212	<i>Gambusia affinis</i>	2

***Hybognathus amarus (age-classes):**

age-0
age-1 1
age-2+

NEW MEXICO: Socorro Co., RIO GRANDE Drainage
Rio Grande, ca. 2.6 miles upstream of Pueblitos Rd. bridge crossing, Escondida

RKD17-041

Site Number: 30 River Mile: 107.1 25 April 2017
UTM Easting: 326303 UTM Northing: 3781123 Zone: 13 Quad: Socorro
R.K. Dudley, W.H. Brandenburg, J.L. Kennedy, C.A. Peralta Effort: 216.8 sq. m

<u>FAMILY</u>		<u>N</u>
76	<i>Cyprinella lutrensis</i>	10
76	<i>Hybognathus amarus*</i>	16
76	<i>Platygobio gracilis</i>	4
81	<i>Carpionodes carpio</i>	1
93	<i>Ictalurus punctatus</i>	1
212	<i>Gambusia affinis</i>	1

***Hybognathus amarus (age-classes):**

age-0
age-1 16
age-2+